

Title (en)  
Rechargeable electrochemical generator with a lithium anode.

Title (de)  
Wieder aufladbarer elektrochemischer Generator mit Lithiumanode.

Title (fr)  
Générateur électrochimique rechargeable à anode de lithium.

Publication  
**EP 0386682 B1 19931103 (FR)**

Application  
**EP 90104216 A 19900305**

Priority  
FR 8903102 A 19890309

Abstract (en)  
[origin: JPH02262242A] PURPOSE: To improve the cycle of a rechargeable electrochemical battery by forming its cathode substance out of manganese dioxide which includes lithium ions and has an alpha manganese dioxide crystal structure called Cryptomelane. CONSTITUTION: A cathode substance is composed of manganese dioxide which includes lithium ions and has an alpha manganese dioxide crystal structure called Cryptomelane. The cathode substance is formed out of a mixture of alpha manganese dioxide and a lithium compound heated at 300 to 400 deg.C. The mole ratio of lithium to manganese is between 0.1 to 0.5 to 1.0. The heat treatment causes chemical reaction between alpha MnO<sub>2</sub> and the lithium compound. The resultant product after the reaction is washed in water to remove an unconverted lithium compound therefrom. The period of the heat treatment is determined such that solids other than alpha dioxide of MnO<sub>2</sub>, especially LiMn<sub>2</sub>O<sub>4</sub> and Li<sub>2</sub>MnO<sub>3</sub> are never formed in the reaction, for example to about 12 hours.

IPC 1-7  
**H01M 4/50**; **H01M 10/40**

IPC 8 full level  
**H01M 4/131** (2010.01); **H01M 4/134** (2010.01); **H01M 4/1391** (2010.01); **H01M 4/50** (2010.01); **H01M 4/505** (2010.01); **H01M 10/05** (2010.01); **H01M 10/0568** (2010.01); **H01M 10/36** (2010.01)

CPC (source: EP US)  
**H01M 4/131** (2013.01 - EP US); **H01M 4/134** (2013.01 - EP US); **H01M 4/1391** (2013.01 - EP US); **H01M 4/505** (2013.01 - EP US); **H01M 10/05** (2013.01 - EP US); **H01M 10/0568** (2013.01 - EP US); **Y02E 60/10** (2013.01 - EP); **Y02P 70/50** (2015.11 - EP)

Cited by  
WO9719477A1

Designated contracting state (EPC)  
AT BE CH DE DK ES FR GB GR IT LI LU NL SE

DOCDB simple family (publication)  
**EP 0386682 A1 19900912**; **EP 0386682 B1 19931103**; AT E96942 T1 19931115; CA 2011773 A1 19900909; CA 2011773 C 19951212; DE 69004296 D1 19931209; DE 69004296 T2 19940224; DK 0386682 T3 19940207; ES 2046561 T3 19940201; FR 2644295 A1 19900914; JP 2634243 B2 19970723; JP H02262242 A 19901025; US 4975346 A 19901204

DOCDB simple family (application)  
**EP 90104216 A 19900305**; AT 90104216 T 19900305; CA 2011773 A 19900308; DE 69004296 T 19900305; DK 90104216 T 19900305; ES 90104216 T 19900305; FR 8903102 A 19890309; JP 14928189 A 19890612; US 35753189 A 19890526